

Searching for the Perfect Airway Device, too Many Options So Little Time

Editorial

Securing the human airway thru an invasive method such as an endotracheal tube has been long considered as the standard of care in people undergoing general anesthesia in an elective or urgent surgery. Garcia, a singing teacher that developed anatomical and physiological knowledge during his years served in the French military hospitals, was among the first to visualize the glottis in humans in the late 1854 a moment in medical history that combined the arts and science [1]. Since that moment the visualization of the vocal cords has brought many challenges; initially thru indirect methods such as dentistry mirrors and reflective light. In 1879 Macewen, a surgeon from Glasgow inserted a tube down to the trachea of a patient with glottis edema allowing breathing and consequently saving his life [2]. This particular method was initially thought to be a feasible idea to the commonly tracheostomy, and later became a common procedure in surgery. With the development of the autoscope in Germany, Kirsten published "The Technique of Insertion of Endotracheal insufflation tubes" in 1913 [3].

Anesthesiologist used to intubate most of the patients with or without difficult airway in the operating rooms and as time passed this translated to people suffering from different conditions that represented an imminent failure to oxygenate properly, most of the times tracheal intubation and mechanical ventilation needed to be started. A difficult airway represents a complex interaction between patient factors, the clinical setting and provider skills [4]. These difficult cases can quickly become emergencies with life-threatening complications or even death. Although rare, the difficult intubation setting presents in the operating rooms presents in 1.15 to 3.8% increasing to a disturbing range of 9 to 12% in the emergency setting outside the OR [5]. As airway management has evolved and other specialists such as intensive care or emergency physicians acquired the responsibility of securing and establishing a patent airway, the risk of doing so in an unstable setting increases the complication rate up to 28% with a mortality of 3% associated with complications such as esophageal intubation, hypoxia, bradycardia and cardiac arrest [6,7]. During training a specialist should undergo at least 57 intubating procedures with a conventional laryngoscope to achieve a 90% success rate [8]. Video assisted intubation was not a popular option at the beginning because of high cost and unpractical rigid designs. Videolaringscopes utilizes indirect laryngoscopy via its camera improving glottic visualization, usually requiring less force to the base of the tongue and soft tissue [9]. The first popular videolaringscope introduced in 2001 to clinical practice was the Glidecope Laryngoscope, Verathon®, equipped with a video screen, anti fog mechanism and a 60-degree angle that improved the glottic exposure even in trauma setting [10]. Over the last 10 years several products have been introduced to clinical practice from various manufactures such as McGrath series 5 (Aircraft Medical®), the C-MAC (Storz®) and Airtraq (Teleflex®). Currently

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Volume 3 Issue 5 - 2015

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Received: December 13, 2015 | **Published:** December 15, 2015

various options of videolaringscopes are available with similar or more complex characteristics such as channeled laryngoscopes with a tube slot making an easier delivery to the glottis. Although current video laryngoscope provides an excellent visualization, the challenge actually is to direct the endotracheal tube thru the vocal cords, requiring practice with manikin ideally before experimenting on a patient or using the device in an emergency setting.

These current and new devices may seem appealing to both the novice specialist and the experienced one. There is a modern concern in teaching hospitals "Do we let the inexperienced trainees start with the videolaringscope or wait until they complete practicing the conventional strategy?". Nouruzi-Sedeh compared the success rate in intubation among novice operators using a video laryngoscope versus the conventional direct laryngoscope with a result of 93% videolaringscope success rate compared with 51% for DL [11]. In the past issue of JACCOP, Dwivedi et al. published a controlled clinical trial comparing the use of Airtraq® and True view EVO2® with Macintosh laryngoscope for endotracheal intubation performed by experienced anesthesiologist in which results also favor the use of videolaringscope (Airtraq®) in first attempt success rate with less time to intubate [12]. This article raises further questions upon what will be the perfect tool for our trade. It may be impossible to compare all of the current airway devices available on today's market with actual patients or specifically in difficult airway settings. What is a reality is the implementation of videolaringscopes in the management of difficult airway suggesting in some cases as the first or second choice in laryngoscopy with the intention of limiting the multiple attempts for intubation [13,14].

What is the perfect airway device? It will be impossible to have all of them in our armamentarium especially in rural hospitals, developing countries, teaching hospitals or private practice. Even less likely to obtain the recommend experience with various devices, the fact is that more people are undergoing emergent

or elective surgeries with older, heavier patients and more comorbidities making them a real challenge in modern airway management. Will video laryngoscopy be the standard of care? Our patients will benefit from a well-taken decision considering what tool is the best option for securing the airway and what is the best device in which we have more experience.

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